



IN REPLY REFER TO:
CMS-AP00-00742

HONOLULU AUTHORITY for RAPID TRANSPORTATION

September 10, 2014

Mr. Leslie T. Rogers, Regional Administrator
Federal Transit Administration, Region IX
U.S. Department of Transportation
201 Mission Street, Suite 1650
San Francisco, California 94105-1839

Dear Mr. Rogers:

Subject: Honolulu Rail Transit Project (H RTP)
Response to PMOC Report 2014 Risk Refresh of July 2014

Daniel A. Grabauskas
EXECUTIVE DIRECTOR AND CEO

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Enclosed is the Honolulu Authority for Transportation's (HART) response to the Federal Transit Administration's (FTA) 2014 Risk Refresh Report. HART has successfully overcome significant obstacles and made steady progress, advancing the project in a way that enhances transparency, efficiency, effectiveness, quality, and safety. As of today, the project remains on schedule and on budget. And in partnership with the FTA, HART closely monitors contingency funds to ensure we stay on budget. HART has also taken proactive management actions to recover time lost due to legal delays, and to address the cost of these delays in a responsible and transparent manner. These delays have had adverse cost consequences and have compressed the project schedule by more than a year. The current market conditions challenge both budget and schedule and are affecting construction cost estimates for the remaining project bids, and HART is working diligently to successfully manage both our contingency fund and our overall project costs to reduce the potential risks this creates.

As noted in the FTA's transmittal letter to HART, the Risk Refresh Report is a planning tool designed to prepare for potential issues that may impact the project's implementation within the context of surrounding conditions. Even though these risk scenarios may not materialize, HART believes that developing proper mitigation plans in advance will better position the agency to respond to these scenarios effectively and efficiently.

HART appreciates the oversight and support from the FTA and the Project Management Oversight Contractor (PMOC), particularly during the April 2014 Risk Refresh Workshop. We look forward to continued partnership with the FTA and the PMOC to address issues relating to the scope, cost, and schedule outlined in the Risk Refresh Report.

If you have any questions, please do not hesitate to contact me at 808-768-6262.

Sincerely,

Daniel A. Grabauskas
Executive Director and CEO

Enclosures

cc: Ms. Elizabeth Scanlon, HART



HONOLULU AUTHORITY for RAPID TRANSPORTATION

Honolulu Rail Transit Project (H RTP)

**Response to PMOC April 2014 Risk Refresh Workshop
Report Dated July 2014 (Final)**

**Submitted to: Federal Transit Administration
September 10, 2014**

Submitted by: Honolulu Authority for Rapid Transportation (HART)

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Honolulu Rail Transit Project (H RTP)

Response to PMOC Report 2014 Risk Refresh of July 2014

1.0 INTRODUCTION

The Honolulu Authority for Rapid Transportation (HART) has successfully overcome significant obstacles and made steady progress, advancing the project in a way that enhances transparency, efficiency, effectiveness, quality and safety. As of today, the project remains on schedule and on budget. Contingency funds are closely monitored to ensure we stay on budget. HART has taken proactive management actions to recover time lost due to legal delays, and mitigate contingency fund losses that also resulted from these delays. Nevertheless, these delays have had serious adverse cost consequences and compressed the project schedule by more than a year. Finally, current market conditions challenge both budget and schedule and are affecting construction cost estimates for the remaining 35 percent of project bids.

The Honolulu Rail Transit Project (Project) has, thus far in its development, weathered several significant challenges including two lawsuits that resulted in construction and property acquisition delays. While HART prevailed in the federal lawsuit six months ago and has fully complied with the Hawaii Supreme Court ruling of August 2012, the legal challenges have had a cascading effect on the project in several areas. As the FTA noted, the legal challenges that resulted in a temporary hold on construction and property acquisition has compressed our construction schedule. Compression has resulted in the need to perform the work in a much shorter timeframe, which will require additional manpower and equipment. The construction market has also shifted considerably, becoming more active in Honolulu during this period and resulting in higher bids than originally projected. All of these challenges have some level of cost and schedule risks associated to them. Some of these cost and schedule impacts have been quantified and others have yet to be fully market-tested.

The Risk Refresh, as noted in FTA's transmittal letter to HART, is a planning tool designed to prepare for potential issues that may impact the project's implementation within the context of surrounding conditions. HART believes that developing proper mitigation plans in advance of possible adverse scenarios better positions the agency to respond effectively and efficiently to a variety of risk scenarios. Even though these scenarios may not occur, HART is preparing to meet the potential challenges of these risks in our planning and management.

HART is committed to doing everything in its power to deliver the Project on time and within budget. To deliver on that promise HART has taken action to manage costs and drafted an aggressive schedule, while making improvements to the Project to ensure the agency delivers a safe, efficient and high-quality transit system.

HART made several key decisions regarding the scope of the Project since the signing of the Full Funding Grant Agreement in December of 2012. These scope refinements enhanced the overall safety and effectiveness of the rail transit system for future passengers. These refinements included: passenger platform safety gates at each station; adding seats to transit vehicles to enhance passenger comfort; adjusting the vehicle consist from a 2-car train to a 4-car train in

the opening year to address overcrowding concerns from seniors and the disabled community; and fully automating the Maintenance & Storage Facility (MSF) yard to enhance yard safety and reduce long-term operating costs. Each of these items was directly related to the improvement of safety, operational efficiency and passenger comfort. With roughly 65 percent of contracts issued and the design nearly 78 percent complete, the scope of the Project has now solidified so that the risk of change to the Project's scope definition is relatively low moving forward.

Since the April 2014 Risk Refresh workshop, significant progress has been made to manage the risks and uncertainties associated with a project of this size and scope. HART has hired key staff to enhance construction oversight; developed proactive schedule and interface strategies; resolved third-party agreements to ensure our schedule remains on track; developed industry outreach to promote fair and healthy competition for project work; and evaluated and refined procurement strategies to strengthen our market position. (See Table 1).

HART continues to aggressively manage the Project, particularly its scope, schedule and budget. Mitigating risks where possible is part of that strategic management plan. Conducting this Risk Refresh in partnership with the FTA and the PMOC reflects a productive and proactive process that further enhances HART's ability to deliver the safe, reliable and high-quality transit system outlined in our Full Funding Grant Agreement.

Table 1 - Measures Taken to Manage Risk and Uncertainty

Area of Risk Management	Type of Action	Description
Technical Capability & Capacity	Roles & Responsibilities	Added specialized staff and clarifying organizational lines of responsibility to streamline decision-making and enhance efficiency
Technical Capability & Capacity	Change Management	Conducted an in-depth analysis of the Change Management process, including examining best practices from other transit agencies, to further streamline the process
Safety	MSF Automated Yard	Settled a significant cost and schedule change to the MSF for implementation of a fully automated train control system to improve yard safety and operational efficiency
Third-Party Agreements	Right-of-Way Acquisition (ROW)	Accelerated ROW acquisitions to reduce pricing risk on Airport/City Center Guideway (ACCGW) Request For Bids (RFB) due to property access limitations

Area of Risk Management	Type of Action	Description
Interface Management	Airport ConRAC Coordination	Developed a new procurement for seven Drilled Pier Foundations at the future HNL Airport Consolidated Rental Auto Center facility area that removed future schedule impacts to ACCGW package, avoiding significant additional costs, inconvenience and schedule delays
Transit Technology	Interim Opening Schedule	Studied and confirmed the appropriate Interim Opening date to mitigate potential cost or schedule acceleration for vehicle delivery, facility construction and systems installation while maintaining the prudent measure to provide an early testing of driverless train technology and operations
Market Factors	On-Call Construction	Implemented the On-Call Construction contract to address minor items, such as the additional AIS trenching and building remodels for partial property acquisitions, to clear the way for larger guideway and station contracts
Market Factors	Pearl Highlands Parking Garage and Transit Center Delivery Method	Changing the delivery method for Pearl Highlands Parking Garage from DBB to DB allows for greater design flexibility and ability for the contractor to meet schedule requirements
Market Factors	Industry Outreach	Reached out to potential bidders through Industry Days and outreach to enhance understanding of the project's contract packages to maximize the number of qualified bidders, increase competition and minimize the potential for protests.

2.0 TECHNICAL CAPACITY & CAPABILITY RECOMMENDATIONS RESPONSES

1. Appoint Project Director

The FTA and PMOC recommend that HART identify a Project Director to serve as a focal point for all capital program decision making, which in turn, will help streamline the program's organizational decision making. HART agrees it is appropriate given the ramp up of construction activities. HART has identified a candidate to fill this role. The Project Director will, working closely with the Executive office and project staff, serve as the decision-making authority for the capital program decisions. **HART will fill this position by September 30, 2014.**

2. Project Management Plan Update

Within the next three months, HART will complete the update of the Project Management Plan (PMP). HART agrees that up-to-date, comprehensive, and concise management plans and procedures are essential to delivering the Project successfully. HART will update the Project Management Plan in close coordination with the PMOC. **HART will complete and submit the plan by December 1, 2014.**

3. Appoint Permanent Risk Manager

The Risk Manager is a key position for HART in order to responsibly identify, manage, and mitigate project risks. HART selected a Project Manager from the General Engineering Consultant III with extensive experience in risk management to serve as Risk Manager for the Project. **HART appointed a permanent Risk Manager in July 2014.**

4. Streamline HART Organization and Define Roles and Responsibilities

HART's organizational roles and responsibilities will be defined in a synchronized effort with the Project Management Plan update to be **completed by December 1, 2014.**

5. Update Management Plans

All of the sub-area management plans, of which there are nearly 20, are key components of the Project Management Plan. Over the past several months, HART has been updating these plans to reflect the current management structure and strategic planning. HART has also developed a detailed tracking system for each of these plans to monitor progress and to ensure the plans are properly completed on schedule. **HART will complete and submit these plans by December 31, 2014.**

3.0 SCOPE RECOMMENDATIONS RESPONSES

As noted in the Risk Refresh Report, there have been no significant changes to the scope of the Project since the execution of the Full Funding Grant Agreement. About 65 percent, or two-thirds, of the project's contracts have already been issued and design is about 78 percent complete; there is a reduction in the level of uncertainty and overall risk. However, the focus of the Risk Refresh Report was on the contract packages not yet bid or those that have seen significant progress since the Full Funding Grant Agreement was executed. The FTA and PMOC note that level of completion of design packages varies across contract packages. Further, there are several third-party agreements and right-of-way acquisitions outstanding. HART has made significant progress in both these areas.

1. Continued Review and Resolution of all Potential Contract Change Orders

With the new Construction Engineering & Inspection (CE&I) Consultants in place and the addition of key HART management staff, a renewed focus on the review, evaluation and resolution of all outstanding Contract Change Orders is underway. This includes the determination of all potential and pending change issues to verify the merit of those issues and to resolve all outstanding items on existing contracts. HART is actively quantifying the remaining potential change orders to assess the potential risk exposure. This is a key exercise toward risk mitigation because it provides HART management with better information to make timely decisions. In addition, HART is evaluating future procurement documents to apply lessons learned and to reduce risks for similar change orders. HART will also review potential and pending change issues with the FTA/PMOC on a monthly basis as

part of cost containment efforts. **HART will provide monthly progress updates to the PMOC beginning in September 2014.**

2. Process Post ROD Documentation

The process to review design refinements for compliance with the Final Environmental Impact Statement (FEIS), Record of Decision (ROD) and Section 106 Programmatic Agreement (PA) is ongoing. HART's Planning/Environmental staff tracks all potential issues and discusses these items with FTA on a bi-weekly basis. This process has been collaborative and highly effective. With the coming completion of Final Design for the program, these refinements will become less of an issue. **HART anticipates this work will be substantially complete by the end of the first quarter of 2015.**

3. Prioritize Resolution of Third-Party Agreements, Right-of-Way Acquisitions and Other Coordination

A significant risk to the Project is the failure to provide access to the required properties, whether it is from governmental entities via third-party agreements or acquisitions of privately owned property. To respond to this risk, HART has embarked on an accelerated right-of-way acquisition schedule to obtain site access to all remaining properties by the end of 2014. HART has increased the staffing level of its Real Estate Consultant in order to effect simultaneous acquisitions for nearly 160 parcels, **which will be substantially completed by December 15, 2014.**

With a few exceptions, HART was prohibited by a partial injunction by the United States District Court from pursuing any real estate acquisition and relocation activities in the City Center Section of Project from December 27, 2012, until February 18, 2014. The delay caused by the injunction disrupted HART's ability, based on existing staffing, resources, and budgeted levels of effort, to deliver all of the acquisitions needed to support the Master Program Schedule for procurement, utility relocation, and construction of the City Center Section. HART has directly responded to this risk element by increasing staffing levels to allow significant amounts of work to occur simultaneously. HART also believes securing site access of the acquisitions needed for the City Center Section by December 2014 is in the best interest of the Project to most effectively mitigate this delay. The current Master Program Schedule provides Notice to Proceed to the Airport/City Center Guideway Construction Contractor on or about December 15, 2014. Therefore, HART must enable the contractor unimpeded access to required right-of-way at that time. This is now a critical path effort aimed at avoiding possible delays and other claims.

Further, HART has engaged in executive-level discussions, as well as ongoing staff coordination, with key third parties including the University of Hawaii, Aloha Stadium, the United States Navy, Hawaii Department of Transportation (HDOT), Hawaiian Electric Company (HECO), and several private development property owners. The intent of this outreach is to ensure that the decision makers are meeting regularly and to clearly communicate the need to expedite the execution of outstanding agreements. This approach has had a positive effect on building mutual understanding of various organizations' needs, which aids in agreements being completed much faster than through traditional methods. **HART anticipates this activity to be substantially complete by the end of the first quarter of 2015.**

4.0 SCHEDULE RECOMMENDATIONS RESPONSES

1. HART Staffing Needs Forecast

HART is continually evaluating staffing needs to appropriately meet the technical requirements of the Project. Recently, HART added several highly qualified assistant deputies in the Design & Construction Department. HART is in the process of updating the professional services cost estimates to account for these positions and to re-evaluate the overall staffing needs of the organization. Careful resource management, including regular evaluation of staffing levels, will help ensure the Project is delivered on time and within budget. **This will be completed by November 30, 2014.**

2. Schedule Calendar Consistency

The Core System Contractor's baseline and update schedules have been submitted with a 7-day calendar for all design, procurement, manufacturing, and construction activities. HART and the GEC had taken exception to that approach for construction activities and conveyed that such a calendar is unacceptable, unworkable and inconsistent with standards in the industry for these activities. The CSC has acknowledged its need to comply with this requirement and has shifted the majority of its construction activities to a 5-day calendar with holidays, and has submitted a revised schedule update with these changes. HART is currently reviewing CSC's revised baseline and updated schedules. **This will be completed by November 1, 2014.**

3. Staffing Plan

As noted above, HART is continually evaluating the staffing needs and levels to appropriately respond to the technical requirements of the Project. The Staffing & Succession Plan is a component of the Project Management. **This plan will be updated by December 31, 2014.**

4. Contractor Monthly Schedule Updates

HART has made significant improvements in both the current status and submission timeliness of all current Design-Build contracts. Contractors now fully understand HART's need for monthly schedule updates, whether contractually required or not.

Earlier this year, the West Oahu Farrington Highway Guideway (WOFH) and Kamehameha Highway Guideway (KHG) contracts' schedule updates were two and four months behind respectively. The MSF's schedule update was one month behind at that period in time.

The MSF and WOFH schedules are now current. The KHG contractor has committed to making their schedule current by September 30, 2014.

5. Scheduler for Core Systems Contractor (CSC)

HART firmly reiterated its concerns regarding the need for the CSC to significantly improve its Project Control's capability and competence. The CSC subsequently obtained the services of a scheduler with significant transit experience from another AHJV project. Early interaction with that individual has been positive and, at this juncture, reduces the need for a HART to embed its own scheduler at CSC. The CSC schedule has been made current and continuous efforts are being made to convert the construction activities to an appropriate workday schedule. **Action completed. HART will continue to closely monitor the CSC schedule.**

5.0 PROJECT COST RECOMMENDATIONS RESPONSES

There have been considerable pressures on the Project's budget early on, with lengthy procurement protests, Notice to Proceed (NTP) delays incurred on HART's first three design-build construction contracts, and the suspension of construction activities and real estate activities due to two lawsuits. This resulted in delay costs, associated escalation costs that are still to be fully determined and right-of-way acceleration costs. In addition, the current schedule has been tightly compressed and the Project is now procuring its remaining contracts in vastly different market conditions than originally planned. There are significant contracts yet to be procured later in 2014 and early 2015 that will shape the cost profile for the project even further, including: all 21 Stations in several different contract packages; East Guideway; and the Pearl Highlands Garage and Transit Center.

HART's management and oversight has been diligent and innovative, and is grateful for FTA and PMOC support in these actions as we successfully navigate our challenges.

The following measures address recommendations provided in the Risk Refresh report and are prudent steps that are important to minimize and contain exposure to identified risks. They also proactively identify areas that could become a cost concern and offer solutions to mitigating these risks.

1. **Prepare Cost Estimates for Potential Changes**

As noted in section 3.0, a renewed focus on the review, evaluation and resolution of all outstanding contract change orders is underway. This includes the determination of all potential and pending change issues to verify the merit of those issues and to resolve all outstanding items on existing contracts. HART is actively quantifying the remaining potential change orders to assess the potential risk exposure. This is a key exercise toward risk mitigation because it provides HART's management with better information to make timely decisions. In addition, HART is evaluating future procurement documents to apply lessons learned and to reduce risks for similar change orders. HART will also review potential and pending change issues with the FTA/PMOC on a monthly basis as part of cost containment efforts. **This is an on-going effort and HART will provide monthly progress updates to the PMOC.**

2. **Airport & City Center Guideway and City Center Utilities Contract Estimate**

Contract packaging has been an important concern as HART attempts to create an economy of scale to allow for off-island competitors to enter the market realizing their need to blend local and remote resources to achieve an optimal price for the taxpayers' dollars. This contract is projected to be the largest capital contract on the Project and HART has used a variety of acceptable methods and approaches to get the best possible estimate on this contract package. This is a challenge due to the unique supply chain for on island construction taking into account existing and potential sources for labor, materials and equipment. To date this has included a detailed, scrutinized analysis of the multiple cost estimates for this package by HART staff, consultants and the project designers. The results of these estimates, as they are vetted for accuracy, are being considered when making critical decisions on all aspects of the Project. In addition, HART is analyzing the

completeness of the design documents and determining the base path forward to ensure the best possible product is provided to the potential bidders. HART is also evaluating the schedule implications of delaying the release of these documents to ensure the best package possible and analyzing subsequent impacts on the overall schedule. **This will be completed by December 2014.**

3. Right of Way Budget Updates

Paying the upfront price to consultants to accelerate the steps necessary to obtain site access to all parcels by the end of the calendar year attempts to eliminate unnecessary risk factors built into the Airport & City Center Guideway and City Center Utilities bids by addressing the contractor's access concerns. This measure also attempts to significantly reduce the risk for access-related delays similar to those incurred on previous contracts. Further, HART has evaluated and provided the PMOC with a refreshed right of way budget in July 2014. This is also being included in any refresh of the overall project budget.

Completed July 2014.

4. Refresh Staffing Cost Estimates

As noted in Section 4, HART is in the process of updating the professional services cost estimates to account for these positions and re-evaluating the overall staffing needs of the organization. Careful resource management, including regular evaluation of staffing levels, will help ensure the Project is delivered on time and within budget. **This will be completed by November 30, 2014.**

5. Re-baseline the Project Budget

An action item derived from the Risk Refresh will be to re-baseline the Project budget. In addition to including up-to-date estimates on future construction contracts, this will include the most recent estimates from ROW and updated budgets on HART costs and Professional Services staff. The ROW budget has been under strict evaluation by HART, particularly to ensure that all required elements are accounted for. During the preparation of the Full Funding Grant Agreement budget for ROW, it was unknown how the real estate market in Hawaii would fluctuate over the course of time. Therefore, a market adjustment factor was built into the cost per parcel to account for this uncertainty. Thus far, the market adjustment factor is sufficient and the current forecast for ROW is favorable. HART is in the process of reviewing the soft costs for the Project, which means evaluating professional services costs and the need to ensure adequate technical capability of the organization to support the implementation of the Project. Finally, HART is evaluating appropriate escalation factors for the updated project cost estimate. **This will be completed by the end of the first quarter of 2015.**

6. Other Project Cost Estimate Actions

- Bid Allowances – In the event delays do occur on future construction contracts, HART has included bid line items on its bid tabs to require bidders to quantify the cost of potential delays. This is a cost containment measure that reduces the opportunity for

lengthy negotiations and minimizes the ambiguity of what cost impacts there are to the contractor if delays do occur.

- Agreement with HDOT to Leave Abandoned Utilities in Place – With this recent HDOT agreement, HART has avoided potential changes on the western section of guideway construction valued at up to \$50M (per contractor rough order magnitude estimates) This also significantly reduces this risk on the Project’s Risk Register. This agreement will also provide an opportunity for savings on the recently awarded Airport Section Utility construction contract even though it will require an immediate change to the contract. HART also expects this agreement will have a favorable impact on the upcoming City Center section of utility relocations contract.
- Projectwide Contract Changes – HART has engaged the CE&I consultants to work closely with the project management staff to assist with establishing cost estimates for all changes and eliminating unnecessary changes. This is essential in ensuring the most accurate cost estimate at completion for the overall project.
- Redefine Interim Opening – There are costs associated with an interim opening that could be saved while continuing to test out the various systems, particularly at a time when ridership is expected to be fairly low due to the fact that the system will only be available on the West end.
- Additional Risk Mitigation – Table 2 is a summary of additional risk mitigation that has been in process since the FTA/PMOC Risk Refresh. These items provide additional benefits to the project with minimal cost of implementation illustrating HART’s progressive approach to continuous improvement.

Table 2 - Summary Table of Risk Mitigation

Area of Risk Management	Type of Action	Description	Total Potential Cost/Schedule Benefit
Third-Party Agreements	Back-Up Power	Exploring alternate means of delivering facility and guideway power to mitigate resource constraints on utility companies	To be determined
Third Party Agreements	HDOT Agreement	Agreement with HDOT to leave in place abandoned utilities, avoiding additional construction costs that were not budgeted in the Full Funding Grant Agreement	\$50M – estimated savings
Market Factors	Escalation	Developing a method to address escalation costs for all existing DB	Management reserve is being held against

Area of Risk Management	Type of Action	Description	Total Potential Cost/Schedule Benefit
		contracts that is fair and reasonable	contingency
Market Factors	Industry Outreach	Reached out to potential bidders through Industry Days and outreach to enhance understanding of the project's contract packages to maximize the number of qualified bidders, increase competition and minimize the potential for protests.	Ongoing, value is undetermined
Market Factors	Procurement Documents	Continuous improvement efforts are rolled into each set of contract documents including the quality of design and technical specification documents	Ongoing, value is undetermined
Market Factors	Instructions to Bidders	Bidders are now asked to include as a bid tab item the daily cost of delay in order to know up front the potential cost of schedule delays due to the reduction in overall float in the program	Increased efficiency in change resolution

- **Westside Station Group Bid Results**

Since the completion of the Risk Refresh workshop in April, HART received bids for the Westside Stations Group solicitation. The bids received were considerably higher than the engineer's estimate, the CE&I validation estimate, and the FFGA Budget. The planned budget/estimate was in the \$152M-\$184M range, including Allocated Contingency; the lowest bid received was \$294M and the high bid was \$321M, which is approximately 60 percent higher than estimated.

HART has conducted an internal analysis of the bids to determine what was driving costs higher than estimated. In summary, those cost drivers included:

- Schedule compression – The schedule required for HART to meet the planned 2017 Interim Opening required that all nine stations be under construction at the same time, with little cascading of trades from one work site to the next. Further, there were very specific dates, and strict requirements for access by other HART contractors in order to access the stations for systems, guideway, and elevator/escalator work to be ready for

the opening. This put tremendous pressure on manpower, materials, and equipment availability.

- Complexity of work items – Rail transit station construction is new to Hawaii and presents some complexities for contractors. Most readily identifiable, platform box girder construction was included in the station package and, depending upon the level of experience and/or sophistication of the individual contractor, this may have caused an increase in pricing risk particularly when coupled with the schedule constraints identified above.
- Completeness and Variety of Scope – There are a number of areas that appear to have caused cost risk due to the variables in the scope of work. In addition, the station designs were not as complete as is typically expected for a design-bid-build solicitation package. In addition, the nine stations included three sets of three stations from three different designers. Although one of the designers was tasked with providing uniformity amongst the three sets, contractors were likely to recognize the difficulty in managing the submittal and request for information processes during construction.
- The overall size of the package – This was an extremely large and complex package. Pressures on manpower, equipment, and materials for this much work occurring concurrently contributed to higher cost risk. Inadequate subcontractor bid coverage was likely experienced by all of the general contractors during the procurement period and requests for an extension to the bid period was requested by the bidders, but denied. The bid submission documentation also required the bidders to include the name and subcontractor license number of all subcontractors (at least 40 trades), which is extremely difficult to do when closing a bid on the due date.

This preliminary analysis by HART indicates that relieving the schedule compression is necessary, which will result in HART delaying the planned 2017 Interim Opening until sometime in 2018. HART is currently reviewing the bids and considering our options. If the solicitation were to be canceled, HART would also re-engage with the general contracting and subcontracting communities to get their feedback. Potential strategies moving forward include re-soliciting the west stations in smaller construction packages over the course of the next several months, which should address the manpower, material, and equipment concerns. HART will also spend additional time evaluating the design and other provisions of the contract to tighten language in order to reduce risk.

6.0 RISK AND CONTINGENCY RECOMMENDATIONS RESPONSES

The FTA's Risk Assessment process, required under the New Starts program, is intended to monitor major transit capital project to provide FTA with information and well-grounded professional opinions regarding the reliability of the project scope, cost and schedule. This Risk Refresh process pays special focus on the elements of uncertainty associated with the effectiveness and efficiency of the project's implementation and within the context of various conditions. While the PMOC conducted their technical analysis, HART also engaged the CE&I contractor to complete an independent risk evaluation using all of the same data that was given to PMOC. The results of HART's internal analysis were similar to the FTA and PMOC's. This resource is valuable for HART to continue internal risk assessments at key future milestones in the Project. This also will help HART to identify risk early in order to position itself to avoid rapid reductions of contingency.

1. Review Project Cost Estimate to Determine How to Ensure On-Budget Project

The Risk Refresh models indicates that if no new actions are taken to respond to identified challenges, the Project could see up to 5.4 percent higher costs, or up to \$265M. In order to offset the potential gap, HART has immediately identified a number of potential capital cost recovery measures, either in the form of cost savings or other measures that will be directly reflected in the Project's costs. The value may vary, as analyses are still underway on many of these items. The timing of when these measures can be realized will also be determined on a case-by-case basis. These items include:

- Revising Projects Financial Plan Elements – HART has fully vetted a revised financial plan that conservatively **saves the project more than \$65M** in finance charges by changing the debt financing strategy assumed in the original plan.

HART and the City and County of Honolulu, with input from an independent financial adviser, have reviewed the debt financing plan approved with the FFGA. This team has proposed changes to the debt financing plan to reduce both the amount borrowed and financing costs.

The FFGA debt financing plan anticipated seven annual General Obligation (GO) Bonds issuances totaling \$1.8 billion and utilizing tax exempt commercial paper with a maximum outstanding amount of \$100M. GO bonds were to be issued starting in Fiscal Year (FY) 2014 with principal and interest payments starting in FY 2015.

The proposed updated debt financing plan substantially reduces the total amount borrowed by: accumulating higher current cash balances; restructuring the debt for interest only payments during construction; and increasing the use of commercial paper to \$350M. The above factors and taking advantage of current low short term -interest rates results in the following benefits:

- Substantially reduces total debt issued (\$589M) from \$1,898M to \$1,309M
- Substantially lowers total financing costs (\$64M) from \$215M to \$151M
- Takes advantage of current low variable interest rates
- Increased debt flexibility with the use of commercial paper, quick access to funds at lowest cost
- Improved debt coverage ratios
- Increases project ending balance from \$193M to \$224M
- Reduces use of 5307 Federal Funds by \$33M

The proposed debt financing plan is currently being reviewed by FTA, and will be included in the debt financing Memorandum of Understanding between the City and HART that will be reviewed by the City Council in the fall of 2014.

Additional details on the debt financing changes are included in **Attachment A**.

- Value Engineering (VE) options– There are multiple VE concepts that can be implemented on current station designs and guideway construction. Early estimates on

these VE concepts project **savings of up to \$12M**. HART continues to evaluate strategies to identify additional cost saving measures without compromising the system critical components.

- Fare Collection System – Evaluations are currently ongoing that could potentially reduce the capital cost estimate for the Fare Collection system **reducing the potential contingency exposure by \$20M**. Once this evaluation is completed, and if realized, this will have an immediate favorable impact on the projected contingency drawdown.
- Project Ending Balance – The current financial plan includes a **project ending balance of \$193M**. While evaluations on the financial plan are underway, HART will be working to identify what amount of this project ending balance could be potentially used for capital cost needs.

2. Update the Risk & Contingency Management Plan

A key sub-area management plan of the Project Management Plan is the Risk and Contingency Management Plan (RCMP). With the finalization of the Risk Refresh process, HART can now update the current RCMP and resubmit it to FTA and PMOC, including decision scenarios for various market responses to remaining procurement of contract packages. Elements of this document will undergo significant changes that will be the result of several factors including significantly improving the projects risk management process. Further, project milestones will need to be revised to reflect the projects current schedule now that it has endured beyond past delays. This process also involves the updating of the Risk Register, the secondary mitigation measures, and other technical elements required under the Risk Assessment for New Starts. **HART anticipates completion and submittal to the FTA and PMOC by November 1, 2014.**

3. Development of Secondary Mitigation Measures

The FTA/PMOC Risk Assessment recommends HART develop secondary mitigation measures that amount up to \$195.5M. This contributes to closing the remaining contingency delta, as described previously. HART agrees with the Risk Report that the Project is potentially facing a number of factors outside of the Project's control that could significantly influence the upcoming procurements. During the next 12 months, over \$1.5B in contract awards will be issued. As a proactive and precautionary measure, HART is also providing a variety of secondary mitigation cost saving options that could be implemented in the event that the Project is faced with circumstances beyond its control that could influence the overall cost of the Project. Ultimately the goal is to do everything within the organization's control to keep the Project within budget without implementing any of the items on the secondary mitigation list. But should the need arise and in order to keep the Project on budget, HART is prepared to make decisions as needed to maintain budget.

In response, HART has evaluated its current list and produced a number of potential secondary mitigation measures that cumulatively surpasses the recommended value by the FTA. Evaluations and discussions are ongoing between HART and FTA/PMOC related to the affects implementing any of these measures would have on the Project scope, Full Funding Grant Agreement or other requirements.

The estimated value of the options in this category is up to \$270M. The possible Secondary Mitigation Measures are described below.

- Defer/Eliminate/Substitute Pearl Highlands Parking Structure – This feature provides significant functionality to users of the system, and eliminating the feature is not preferable. However, there are several possible scenarios related to the Parking Garage and Transit Center that can be used to protect the existing budget should costs for future contracts come in higher than budgeted; A) defer the award of this contract until there is cost certainty on other bids, B) defer and seek alternative financing through public/ private partnership with cost recovery through parking fee or Transit Oriented Development recovery, C) possible addition of Pearl Highlands Station to create additional economy of scale, and/or D) explore substitute locations along the route for additional surface parking. **The potential estimated value is \$200M.**
- Utilize Alternative Delivery Method for Parking – Convert all parking to Public/Private Partnership delivery method (less Pearl Highlands parking structure). **The potential estimated value is \$15M.**
- Eliminate all pedestrian bridges at double entry stations– Rely upon at-grade pedestrian crossings. **The potential estimated value is \$22M.**
- Eliminate procurement and installation of all escalators– This measure would not preclude the installation of escalators in that the stations would be built to accept them at a later date. But, the measure would indefinitely defer installation escalators to a later date when funding can be identified without losing current functionality of transit system. **The potential estimated value is \$18M.**
- Reduce Size/Change the Materials canopies– Altering the station canopies is not preferable, but they could be re-evaluated to reduce the size, utilize less expensive materials, or some canopies could be eliminated. This item could also be done in such a way as to not preclude modifying them at later date when funding can be identified. **The potential estimated value is \$15M.**

7.0 CONCLUSION

HART remains committed to delivering a safe, reliable and high-quality transit system on time and within budget. The Project has successfully overcome tremendous challenges, and has made improvements to the project's scope that enhances safety, increases efficiency and, in many cases, reduces costs. Though the legal challenges are behind the Project, the delays have created a compressed schedule that creates a difficult climate and in some cases threatens to increase costs. Through proactive and rigorous review, HART will employ lessons learned, constantly evaluate various risk factors, and will make timely decisions to change course when necessary.

HART, in partnership with FTA and the PMOC, will continue to closely monitor the status of the Project's scope, schedule and budget and proactively plan for and address all of the potential risks outlined in the Risk Refresh Report.



ATTACHEMENT A:

HONOLULU RAIL TRANSIT PROJECT

REVISED DEBT FINANCING PLAN

Updated Debt Financing Plan

August 2014

Attachment A

UPDATED FINANCING PLAN: TABLE A-1, CAPITAL PLAN CASH FLOWS

Updated Table A-1, Capital Plan Cash Flows

(Figures in \$ millions)	Prior to FY 2013	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Updated Total	FFGA Total	Change
Beginning Project Cash Balance	\$ 298	\$ 418	\$ 393	\$ 239	\$ 25	\$ 25	\$ 24	\$ 25	\$ 25	\$ 25	\$ 25	\$ 44	\$ 224	\$ 298	\$ 298	\$ -
Project Funding Sources																
Net GET Surcharge Revenues	\$ 481	\$ 170	\$ 216	\$ 227	\$ 238	\$ 250	\$ 263	\$ 276	\$ 290	\$ 305	\$ 325	\$ 251	\$ -	\$ 3,291	\$ 3,291	\$ -
FTA Section 5309 New Starts Revenues	\$ 65	\$ 80	\$ 291	\$ 383	\$ 321	\$ 230	\$ 181	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,550	\$ 1,550	\$ -
FTA Section 5307 Formula Funds Used for the Project	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 33	\$ 34	\$ 35	\$ 36	\$ 38	\$ -	\$ -	\$ -	\$ 176	\$ 210	\$ (33)
ARRA Funds Used for the Project	\$ 4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4	\$ 4	\$ -
Variable Rate Bond Proceeds (net of issuance cost)	\$ -	\$ -	\$ -	\$ 20	\$ 230	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 250	\$ -	\$ 250
Fixed Rate Bond Proceeds (net of issuance cost)	\$ -	\$ -	\$ -	\$ -	\$ 243	\$ 248	\$ 272	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 763	\$ 1,645	\$ (882)
Proceeds from Tax Exempt Commercial Paper (TECP)	\$ -	\$ -	\$ -	\$ 350	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350	\$ 700	\$ (350)
Reserve Fund Release	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ 140	\$ 140	\$ -
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2	\$ (2)
Additional Funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Project Sources of Funds	\$ 551	\$ 250	\$ 507	\$ 980	\$ 1,032	\$ 761	\$ 750	\$ 311	\$ 326	\$ 343	\$ 325	\$ 391	\$ -	\$ 6,526	\$ 7,543	\$ (1,018)
Project Capital Costs																
Total Capital Cost	\$ 431	\$ 275	\$ 661	\$ 1,194	\$ 1,024	\$ 730	\$ 572	\$ 61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,949	\$ 4,949	\$ -
Debt Service and Transfers																
Principal Payment on Variable Rate Bonds for the Project (VAR)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 48	\$ 49	\$ 50	\$ 51	\$ 53	\$ -	\$ 252	\$ -	\$ 252
Interest Payment and Fees on Variable Rate Bonds	\$ -	\$ -	\$ -	\$ -	\$ 1	\$ 7	\$ 5	\$ 5	\$ 4	\$ 3	\$ 2	\$ 1	\$ -	\$ 26	\$ -	\$ 26
Fees on Variable Rate Bonds Issued for the Project (VAR)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2	\$ 2	\$ 1	\$ 1	\$ 1	\$ -	\$ -	\$ -	\$ 8	\$ -	\$ 8
Principal Payment on Fixed Rate Bonds Issued for the Project (FIXE)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 130	\$ 135	\$ 140	\$ 147	\$ 154	\$ -	\$ 707	\$ 1,798	\$ (1,091)
Interest Payment on Fixed Rate Bonds Issued for the Project (FIXE)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 14	\$ 24	\$ 33	\$ 23	\$ 18	\$ 11	\$ 4	\$ -	\$ 128	\$ 191	\$ (64)
Principal Payment on TECP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25	\$ 107	\$ 126	\$ 92	\$ -	\$ -	\$ 350	\$ 700	\$ (350)
Interest Payment on TECP	\$ -	\$ -	\$ -	\$ -	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 3	\$ 1	\$ -	\$ -	\$ 32	\$ 10	\$ 22
Fees on TECP	\$ -	\$ -	\$ -	\$ -	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 1	\$ 1	\$ -	\$ -	\$ 11	\$ -	\$ 11
Transfer to Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ -
Transfer from Project Cash Balance to Ongoing Rail Capital and O&M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 224	\$ 224	\$ 193	\$ 31
Total Project Uses of Funds	\$ 431	\$ 275	\$ 661	\$ 1,194	\$ 1,032	\$ 761	\$ 750	\$ 311	\$ 326	\$ 342	\$ 306	\$ 211	\$ 224	\$ 6,824	\$ 7,841	\$ (1,157)
Total Finance Charges	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ -	\$ 5		
FFGA Eligible Finance Charges	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2	\$ 1	\$ 1	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ 4		
Net Cash	\$ 120	\$ (25)	\$ (154)	\$ (214)	\$ (0)	\$ (0)	\$ 0	\$ 0	\$ (0)	\$ 0	\$ 19	\$ 180	\$ (224)			
Ending Project Cash Balance	\$ 418	\$ 393	\$ 239	\$ 25	\$ 25	\$ 24	\$ 25	\$ 25	\$ 25	\$ 25	\$ 44	\$ 224	\$ -	\$ -		
Reserve Fund Balance																
Beginning Reserve Fund Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 140	\$ 140	\$ 140	\$ -	\$ -		
Deposit to Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140		
Interest Income on Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Reserve Fund Release	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (140)	\$ -	\$ (140)		
Ending Reserve Fund Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 140	\$ 140	\$ 140	\$ -	\$ -	\$ -		

* Maximum TECP outstanding totals \$350 m in the Updated Plan and \$100 m in FFGA

** Debt Reserve in FFGA is included in the \$1,798 Fixed Rate Bond Total but shown separately for comparison purposes

Attachment B

UPDATED FINANCING PLAN: CASH FLOW ANALYSIS AND BOND DETAIL

MAY 15, 2014

Honolulu Authority for Rapid Transportation

Cash Flow Analysis and Bond Detail

Borrowing Assumptions

- ❑ CP borrowing rate = 1.55%
- ❑ Variable Rate Bonds borrowing rate = 2.0%
- ❑ Fixed Rate Bonds borrowing rate
 - ❑ Premium coupon structure
 - Representative of bond structures in low yield environment
 - ❑ Yields are AAA MMD plus a 6 – 30 bps pricing spread
 - ❑ Cushion for each subsequent year of 30 bps to account for increasing rates

Financing Assumptions	
Target Fund Balance	\$ 25,000,000
Commercial Paper	
CP Maximum	\$ 350,000,000
Interest Rate	1.55%
Liquidity Fee	0.50%
CP Dealer Fee	0.05%
Variable Rate Bonds	
Variable Rate	2.00%
SBPA/LOC Fee	0.50%
Remarketing Fee	0.10%
Bond	
Cost of Issuance	\$ 700,000
Underwriter's Discount	\$4/bond
DSRF Contribution	\$ 140,000,000

Bond Borrowing Rate Assumptions					
Year	AAA GO 4/9/2014	Pricing Spread	Yield	Volatility Spread	Coupon
1	0.15%	6	0.21%	30	3.00%
2	0.39%	12	0.51%		4.00%
3	0.68%	12	0.80%		4.00%
4	0.98%	13	1.11%		5.00%
5	1.26%	13	1.39%		5.00%
6	1.60%	18	1.78%		
7	1.88%	21	2.09%		
8	2.12%	21	2.33%		
9	2.29%	21	2.50%		
10	2.42%	21	2.63%		
11	2.54%	22	2.76%		
12	2.65%	23	2.88%		
13	2.76%	24	3.00%		
14	2.86%	30	3.16%		
15	2.95%	30	3.25%		

Cash Flow Table

(Figures in \$ millions)																	Total
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024					
Beginning Project Cash Balance	\$ 418	\$ 393	\$ 239	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 44	\$ 224	\$				\$ 418
Project Funding Sources																	
Net GET Surcharge Revenues	\$ 170	\$ 216	\$ 227	\$ 238	\$ 250	\$ 263	\$ 276	\$ 290	\$ 305	\$ 325	\$ 251						\$ 2,811
FTA Section 5309 New Starts Revenues	\$ 80	\$ 291	\$ 383	\$ 321	\$ 230	\$ 181											\$ 1,486
FTA Section 5307 Formula Funds Used for the Project				\$ 33	\$ 34	\$ 35	\$ 36	\$ 38									\$ 176
ARRA Funds Used for the Project																	\$ -
Variable Rate Bond Proceeds (net of issuance cost)			\$ 20	\$ 230													\$ 250
Fixed Rate Bond Proceeds (net of issuance cost)				\$ 243	\$ 248	\$ 272											\$ 763
Proceeds from Tax Exempt Commercial Paper (TECP)		\$ -	\$ 350	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350
Reserve Fund Release	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140
Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Additional Funds																	\$ -
Total Project Sources of Funds	\$ 250	\$ 507	\$ 980	\$ 1,032	\$ 761	\$ 750	\$ 311	\$ 326	\$ 343	\$ 325	\$ 391	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,976
Project Capital Costs																	
Total Capital Cost	\$ 275	\$ 661	\$ 1,194	\$ 1,024	\$ 730	\$ 572	\$ 61										\$ 4,517
Debt Service and Transfers																	
Principal Payment on Variable Rate Bonds Issued for the Project (VAR)			\$ -	\$ -	\$ -	\$ -	\$ 48	\$ 49	\$ 50	\$ 51	\$ 53	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 252
Interest Payment and Fees on Variable Rate Bonds Issued for the Project (VAR)			\$ -	\$ 1	\$ 7	\$ 5	\$ 5	\$ 4	\$ 3	\$ 2	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 26
Fees on Variable Rate Bonds Issued for the Project (VAR)			\$ -	\$ 0	\$ 2	\$ 2	\$ 1	\$ 1	\$ 1	\$ 0	\$ 0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8
Principal Payment on Fixed Rate Bonds Issued for the Project (FIXED)			\$ -	\$ -	\$ -	\$ -	\$ 130	\$ 135	\$ 140	\$ 147	\$ 154	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 707
Interest Payment on Fixed Rate Bonds Issued for the Project (FIXED)			\$ -	\$ -	\$ 14	\$ 24	\$ 33	\$ 23	\$ 18	\$ 11	\$ 4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 128
Principal Payment on TECP		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25	\$ 107	\$ 126	\$ 92	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350
Interest Payment on TECP		\$ -	\$ -	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 3	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 32
Fees on TECP		\$ -	\$ -	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 1	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11
Transfer to Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140
Transfer from Project Cash Balance to Ongoing Rail Capital and O&M Cost												\$ 224	\$ -	\$ -	\$ -	\$ -	\$ 224
Total Project Uses of Funds	\$ 275	\$ 661	\$ 1,194	\$ 1,032	\$ 761	\$ 750	\$ 311	\$ 326	\$ 343	\$ 306	\$ 211	\$ 224	\$ -	\$ -	\$ -	\$ -	\$ 6,394
Net Cash	\$ (25)	\$ (154)	\$ (214)	\$ 0	\$ 0	\$ 0	\$ (0)	\$ -	\$ -	\$ 19	\$ 180	\$ (224)	\$ -	\$ -	\$ -	\$ -	\$ (418)
Ending Project Cash Balance	\$ 393	\$ 239	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 44	\$ 224	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reserve Fund Balance																	
Beginning Reserve Fund Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 140	\$ 140	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Deposit to Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140
Interest Income on Reserve Fund																	\$ -
Reserve Fund Release	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (140)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (140)
Ending Reserve Fund Balance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 140	\$ 140	\$ 140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Coverage																	Min
GO Bond Debt Service Coverage				293.60x	10.57x	8.61x	1.27x	1.37x	1.44x	1.53x	1.19x						1.19x
Total Debt Service Coverage (GO Bonds and Commercial Paper)				29.16x	8.07x	6.94x	1.10x	0.89x	0.89x	1.06x	1.19x						0.89x



Bond Detail



Fixed Rate Bond Series

Series 2014F	
Sources	
Par	\$ -
Premium	\$ -
Total Sources	\$ -
Uses	
Project Fund	\$ -
Reserve Fund	\$ -
Cost of Issuance	\$ -
Underwriter's Discount	\$ -
Additional Proceeds	\$ -
Total Uses	\$ -

Fiscal Year	Maturity	Par Amount	Coupon	Yield	Interest	Debt Service
2015	12/1/2014	\$ -			\$ -	\$ -
2016	12/1/2015	\$ -		0.51%	\$ -	\$ -
2017	12/1/2016	\$ -		0.81%	\$ -	\$ -
2018	12/1/2017	\$ -		1.10%	\$ -	\$ -
2019	12/1/2018	\$ -	3.00%	1.41%	\$ -	\$ -
2020	12/1/2019	\$ -	4.00%	1.69%	\$ -	\$ -
2021	12/1/2020	\$ -	4.00%	2.08%	\$ -	\$ -
2022	12/1/2021	\$ -	5.00%	2.39%	\$ -	\$ -
2023	12/1/2022	\$ -	5.00%	2.63%	\$ -	\$ -
Total		\$ -			\$ -	\$ -

All-In TIC N/A

Series 2015F	
Sources	
Par	\$ 221,165,000.00
Premium	\$ 23,586,078.15
Total Sources	\$ 244,751,078.15
Uses	
Project Fund	\$ 243,161,000.00
Reserve Fund	\$ -
Cost of Issuance	\$ 700,000.00
Underwriter's Discount	\$ 884,660.00
Additional Proceeds	\$ 5,418.15
Total Uses	\$ 244,751,078.15

Fiscal Year	Maturity	Par Amount	Coupon	Yield	Interest	Debt Service
2016	12/1/2015	\$ -			\$ -	\$ -
2017	12/1/2016	\$ -		0.81%	\$ 14,072,775	\$ 14,072,775
2018	12/1/2017	\$ -		1.11%	\$ 9,381,850	\$ 9,381,850
2019	12/1/2018	\$ 40,750,000	3.00%	1.40%	\$ 8,770,600	\$ 49,520,600
2020	12/1/2019	\$ 42,210,000	4.00%	1.71%	\$ 7,315,150	\$ 49,525,150
2021	12/1/2020	\$ 43,930,000	4.00%	1.99%	\$ 5,592,350	\$ 49,522,350
2022	12/1/2021	\$ 45,960,000	5.00%	2.38%	\$ 3,564,750	\$ 49,524,750
2023	12/1/2022	\$ 48,315,000	5.00%	2.69%	\$ 1,207,875	\$ 49,522,875
Total		\$ 221,165,000			\$ 49,905,350	\$ 271,070,350

All-In TIC 2.33%

Note: Series 2015F is issued on 12/1/15 during FY2016

Fixed Rate Bond Series

Series 2016F	
Sources	
Par	\$ 229,420,000.00
Premium	\$ 20,197,595.20
Total Sources	\$ 249,617,595.20
Uses	
Project Fund	\$ 247,997,000.00
Reserve Fund	\$ -
Cost of Issuance	\$ 700,000.00
Underwriter's Discount	\$ 917,680.00
Additional Proceeds	\$ 2,915.20
Total Uses	\$ 249,617,595.20

Fiscal Year	Maturity	Par Amount	Coupon	Yield	Interest	Debt Service
2017	12/1/2016	\$ -			\$ -	\$ -
2018	12/1/2017	\$ -		1.11%	\$ 14,598,000	\$ 14,598,000
2019	12/1/2018	\$ 42,275,000	3.00%	1.41%	\$ 9,097,875	\$ 51,372,875
2020	12/1/2019	\$ 43,780,000	4.00%	1.70%	\$ 7,588,150	\$ 51,368,150
2021	12/1/2020	\$ 45,570,000	4.00%	2.01%	\$ 5,801,150	\$ 51,371,150
2022	12/1/2021	\$ 47,675,000	5.00%	2.29%	\$ 3,697,875	\$ 51,372,875
2023	12/1/2022	\$ 50,120,000	5.00%	2.68%	\$ 1,253,000	\$ 51,373,000
Total		\$ 229,420,000			\$ 42,036,050	\$ 271,456,050

All-In TIC	2.37%
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Series 2017F	
Sources	
Par	\$ 256,020,000.00
Premium	\$ 17,600,252.00
Total Sources	\$ 273,620,252.00
Uses	
Project Fund	\$ 271,893,000.00
Reserve Fund	\$ -
Cost of Issuance	\$ 700,000.00
Underwriter's Discount	\$ 1,024,080.00
Additional Proceeds	\$ 3,172.00
Total Uses	\$ 273,620,252.00

Fiscal Year	Maturity	Par Amount	Coupon	Yield	Interest	Debt Service
2018	12/1/2017	\$ -			\$ -	\$ -
2019	12/1/2018	\$ 47,175,000	3.00%	1.41%	\$ 15,582,900	\$ 62,757,900
2020	12/1/2019	\$ 48,860,000	4.00%	1.71%	\$ 8,467,900	\$ 57,327,900
2021	12/1/2020	\$ 50,855,000	4.00%	2.00%	\$ 6,473,600	\$ 57,328,600
2022	12/1/2021	\$ 53,200,000	5.00%	2.31%	\$ 4,126,500	\$ 57,326,500
2023	12/1/2022	\$ 55,930,000	5.00%	2.59%	\$ 1,398,250	\$ 57,328,250
Total		\$ 256,020,000			\$ 36,049,150	\$ 292,069,150

All-In TIC	2.43%
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Note: Series 2016F is issued on 12/1/16 during FY2017
Series 2017F is issued on 12/1/17 during FY2018

Variable Rate Bond Series

Series 2014V	
Sources	
Premium	20,785,000.00
Total Sources	20,785,000.00
Uses	
Project Fund	20,000,000.00
Reserve Fund	-
Cost of Issuance	700,000.00
Underwriter's Discount	83,140.00
Additional Proceeds	1,860.00
Total Uses	20,785,000.00

Fiscal Year	Maturity	Par Amount	Coupon/Yield	Interest	Fees	Debt Service
2015	12/1/2014	\$ -		\$ -	\$ -	\$ -
2016	12/1/2015	\$ -		\$ 623,550	\$ 187,065	\$ 810,615
2017	12/1/2016	\$ -		\$ 415,700	\$ 124,710	\$ 540,410
2018	12/1/2017	\$ -		\$ 415,700	\$ 124,710	\$ 540,410
2019	12/1/2018	\$ 3,990,000	2.00%	\$ 375,800	\$ 112,740	\$ 4,478,540
2020	12/1/2019	\$ 4,075,000	2.00%	\$ 295,150	\$ 88,545	\$ 4,458,695
2021	12/1/2020	\$ 4,155,000	2.00%	\$ 212,850	\$ 63,855	\$ 4,431,705
2022	12/1/2021	\$ 4,240,000	2.00%	\$ 128,900	\$ 38,670	\$ 4,407,570
2023	12/1/2022	\$ 4,325,000	2.00%	\$ 43,250	\$ 12,975	\$ 4,381,225
Total		\$ 20,785,000		\$ 2,510,900	\$ 753,270	\$ 24,049,170

All-In TIC 3.29%

Series 2015V	
Sources	
Premium	231,630,000.00
Total Sources	231,630,000.00
Uses	
Project Fund	230,000,000.00
Reserve Fund	-
Cost of Issuance	700,000.00
Underwriter's Discount	926,520.00
Additional Proceeds	3,480.00
Total Uses	231,630,000.00

Fiscal Year	Maturity	Par Amount	Coupon/Yield	Interest	Fees	Debt Service
2016	12/1/2015	\$ -		\$ -	\$ -	\$ -
2017	12/1/2016	\$ -		\$ 6,948,900	\$ 2,084,670	\$ 9,033,570
2018	12/1/2017	\$ -		\$ 4,632,600	\$ 1,389,780	\$ 6,022,380
2019	12/1/2018	\$ 44,490,000	2.00%	\$ 4,187,700	\$ 1,256,310	\$ 49,934,010
2020	12/1/2019	\$ 45,390,000	2.00%	\$ 3,288,900	\$ 986,670	\$ 49,665,570
2021	12/1/2020	\$ 46,310,000	2.00%	\$ 2,371,900	\$ 711,570	\$ 49,393,470
2022	12/1/2021	\$ 47,245,000	2.00%	\$ 1,436,350	\$ 430,905	\$ 49,112,255
2023	12/1/2022	\$ 48,195,000	2.00%	\$ 481,950	\$ 144,585	\$ 48,821,535
Total		\$ 231,630,000		\$ 23,348,300	\$ 7,004,490	\$ 261,982,790

All-In TIC 2.75%

Note: Series 2014V is issued on 12/1/14 during FY2015
Series 2015V is issued on 12/1/15 during FY2016

Commercial Paper

Commercial Paper	
Max. Amount Outstanding	\$ 350,000,000
Total Drawn	\$ 350,000,000
Interest Rate	1.55%
Liquidity Fee	0.50%
CP Dealer Fee	0.05%

Fiscal Year	Principle Amount	Interest	Fees	Debt Service
2015	\$ -	\$ -	\$ -	\$ -
2016	\$ -	\$ 5,425,000	\$ 1,925,000	\$ 7,350,000
2017	\$ -	\$ 5,425,000	\$ 1,925,000	\$ 7,350,000
2018	\$ -	\$ 5,425,000	\$ 1,925,000	\$ 7,350,000
2019	\$ 24,606,065	\$ 5,425,000	\$ 1,925,000	\$ 31,956,065
2020	\$ 106,821,262	\$ 5,043,606	\$ 1,789,667	\$ 113,654,535
2021	\$ 126,362,699	\$ 3,387,876	\$ 1,202,150	\$ 130,952,725
2022	\$ 92,209,974	\$ 1,429,255	\$ 507,155	\$ 94,146,383
2023	\$ -	\$ -	\$ -	\$ -
2024	\$ -	\$ -	\$ -	\$ -
2025	\$ -	\$ -	\$ -	\$ -
Total	\$ 350,000,000	\$ 31,560,737	\$ 11,198,971	\$ 392,759,708